

# **MECHANICAL DELAYING DEVICE OF SHREDDER**

## **BACKGROUND OF THE INVENTION**

### **(a) Field of the Invention**

The invention relates to shredder having a delaying and halting device  
5 using a spindle, a roller and a gear axis, and being capable of overcoming  
drawbacks as short-circuits and malfunctions of prior electronic delaying  
devices, thereby lengthening lifespan of the shredder.

### **(b) Description of the Prior Art**

Common delaying devices of shredders usually adopt electronic  
10 components such as printed circuit boards, sensors and the like. However,  
these electronic delaying devices frequently result in malfunctions in the  
shredders due to humidity or poor contacts.

## **SUMMARY OF THE INVENTION**

The primary object of the invention is to provide a shredder having  
15 spindle at frames of blade assemblies, a roller accommodated around an  
axis shaft connected at a bottom portion of a cantilever at one end of the  
spindle, and a projecting gear axis at an outer side of a fixing plate of the  
blade assemblies. Using an interlocking relationship by inserting the  
roller into gear grooves of the gear axis, mechanical delaying and halting  
20 purposes are accomplished after inserting paper.

## **BRIEF DESCRIPTION OF THE DRAWINGS**

FIG. 1 shows an elevational view according to the invention.

FIG. 2 shows a partial structural view according to the invention.

FIG. 3 shows a partial sectional view of the frame in FIG. 2 according to  
25 the invention.

FIG. 4 shows a planar view illustrating the delaying device according to the invention not inserted with paper or having completed shredding.

FIG. 5 shows a motional schematic view of the spindle and the gear axis of the delaying device according to the invention.

5 FIG. 6 shows a planar view illustrating the delaying device according to the invention inserted with paper.

## **DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS**

To better understand the invention, detailed descriptions shall be given  
10 with the accompanying drawings hereunder.

Referring to FIGS. 1 and 2, the invention comprises an upper lid 1, a base 2, a motor 3, a decelerator 4, and two blade assemblies 5 and 6. The upper lid 1 has a feeder 11 and a switch button 12 at a top portion thereof. The base 2 accommodates the motor 3, the decelerator 4, and the two blade  
15 assemblies 5 and 6 at an interior thereof, and has a shred container 10 at a bottom portion thereof. The motor 4 is for driving and rotating the decelerator 4 consisted of a plurality of gears, and the decelerator 4 is for driving and rotating the two blade assemblies 5 and 6, thereby shredding paper. The two blade assemblies 5 and 6 are provided with U-shaped  
20 plastic frames 51 and 61 that have openings thereof facing outward, so as to form a long shredder slot 50 connected with the feeder 11 of the upper lid 1. The frames 51 and 61 of the two blade assemblies 5 and 6 are fastened at metal fixing plates 52 and 62 via two sides thereof, respectively. The characteristics of the two blade assemblies 5 and 6 are that:  
25 the frame 61 of the right blade assembly 6 has two axis bases 611 and 612

for receiving a spindle 7 above; an axis 71 at one end the spindle 7 is penetrated into an axis opening 6121 of the axis base 612, whereas the other end of the spindle 7 is connected to a cantilever 72 as shown in FIG. 3; at a top portion of the spindle 7 near the axis opening 6121 is a pressing member 73, which is tilted downward to extend into the shredder slot 50 of the two blade assemblies 5 and 6, such that when paper is entered into the shredder slot 50, the pressing member 73 is simultaneously pressed downward for driving and rotating the spindle 7; a bottom portion of the cantilever 72 at one end the spindle 7 is connected with a transverse axis shaft 721 accommodated by a circular roller 8; a rear end of the axis shaft 721 is fastened with a circular baffle 74 using a screw bolt 741; the roller 8 and the baffle 74 are accommodated by a spring 81 in between such that the roller 8 is allowed with displacement by pressing against the spring 81 as shown in FIG. 3; an outer side of the fixing plate 51 of the blade assembly 6 is a projecting gear axis 9, which is connected and spontaneously moves with an axis of the blade assembly 6; and gear grooves 91 at the gear axis 9 are for placing the roller 8.

Referring to FIGS. 4 and 5, when paper P is not inserted, the roller 8 is pressed against the spring 81 and blocks at an outer side of the gear axis 9. When the paper P is inserted, the paper P downwardly presses the pressing member 73 that further drives and rotates the spindle 7 below. Referring to FIG. 5, the roller 8 is displaced outward or upward so as to depart from the gear axis 9. A restoring force of the spring 81 pushes the roller 8 inward with a section at a time as shown in FIG. 6. Referring to FIG. 4, the roller 8 is stretched into the gear grooves 91 of the gear axis 9, and is

pushed toward an outermost end of the gear axis 9 along with rotation of the gear axis 9 by the axis of the shredding blade assembly 6. At this point, the shredder comes to a halt for having completed shredding, thereby accomplishing the objects of delaying and halting.

5 Conclusive from the above, the invention utilizes an interlocking relationship between the spindle, the roller and the gear axis for accomplishing delaying and halting of the shredder, and advances over drawbacks such as short-circuits and malfunctions of electronic sensors and printed circuit boards in the prior shredder.

10 It is of course to be understood that the embodiment described herein is merely illustrative of the principles of the invention and that a wide variety of modifications thereto may be effected by persons skilled in the art without departing from the spirit and scope of the invention as set forth in the following claims.

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